

1-31. (Cancelled)

32. (Previously Presented) An isolated and purified nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO. 13.

33. (Cancelled)

34. (Previously Presented) A composition consisting essentially of an isolated nucleic acid molecule consisting essentially of the nucleotide sequence of SEQ ID NO. 13.

35. (Currently Amended) The composition of claim 34, further comprising ~~one or more nucleic acid molecules comprising the nucleotide sequence of any one of either SEQ ID NO: 56 or 57 1 to 12 or 14 to 68, or a part thereof.~~

36. (Cancelled)

37. (Currently Amended) 1. A primer comprising a nucleotide sequence corresponding to the nucleotide sequence ~~from position about 10 to about 20 nucleotides of position~~ 586 to 606 or position 791 to 810 of SEQ ID NO: 13.

38. (Previously Presented) A composition comprising the primer according to claim 37.

39. (Cancelled)

40. (Currently Amended) A method of detecting the presence of a particular H serotype of *E. coli* in a sample, the method comprising the following steps:

(a) contacting a gene of an *E. coli* in the sample, under hybridizing conditions, with a at least one nucleic acid molecule according to claim 32 wherein the at least one nucleic acid molecule is specific for a particular flagellin gene associated with the particular H serotype of *E. coli* in conditions sufficient to allow the nucleic acid molecule to hybridise to a nucleic acid molecule having a complementary nucleic acid sequence; and

(b) detecting any hybridized nucleic acid molecules wherein the presence of specifically hybridized nucleic acid molecules indicates the presence of that H serotype of *E. coli* in the sample whether the nucleic acid molecule is hybridized to the gene, to detect the H serotype of the *E. coli* in the sample.

41. (Currently Amended) A method of detecting the a particular H serotype of *E. coli* in a sample, the method comprising the following steps:

(a) contacting a gene of an *E. coli* in the sample, under hybridizing conditions, with a pair of nucleic acid molecule molecules wherein one of the pair is specific for a flagellin gene associated with the particular H serotype of *E. coli* and is a nucleic acid molecule according to claim 32 and

~~the other one of the pair comprises SEQ ID NO: 57; and one or more nucleic acid molecules comprising a nucleotide sequence of any one of SEQ ID NO: 1 to 12 or 14 to 44 or 46 to 55 or 57 to 68 or a part thereof, in conditions sufficient to allow at least one of the nucleic acid molecules to hybridise to a nucleic acid molecule having a complementary nucleic acid sequence; and~~

~~(b) detecting any hybridized nucleic acid molecules wherein the presence of hybridized nucleic acid molecules signifies the presence of the particular H serotype of E. coli whether one or more of the at least one nucleic acid molecules is hybridized to the gene, to detect the H serotype of the E. coli in the sample.~~

42. (Previously Presented) A method according to claim 40 or 41 wherein the hybridized nucleic acid molecules are detected by Southern Blot analysis.

43-45. (Cancelled)

46. (Currently amended) A method for the detecting the presence of a H and O serotype of E. coli in a sample, the method comprising the following steps:

~~(a) contacting a gene of the E. coli the sample, under hybridizing conditions, with at least one pair of nucleic acid molecules wherein one of the pair is a nucleic acid molecule selected from the group consisting of: wbdh (nucleotide position 739 to 1932 of SEQ ID NO: 45, wzx (nucleotide position 8646 to 9911 of SEQ ID NO: 45,~~

~~wzy~~ (nucleotide position 9901 to 10953 of SEQ ID NO: 45,
~~wbdM~~ (nucleotide position 11821 to 12945 of SEQ ID NO: 45,
~~wbdN~~ (nucleotide position 79 to 861 of SEQ ID NO: 56),
~~wbdO~~ (nucleotide position 2011 to 2757 of SEQ ID NO: 56),
~~wbdP~~ (nucleotide position 5257 to 6471 of SEQ ID NO: 56),
~~wbdR~~ (nucleotide position 13156 to 13821 of SEQ ID NO: 56),
~~wzx~~ (nucleotide position 2744 to 4135 of SEQ ID NO: 56),
~~wzy~~ (nucleotide position 858 to 2042 of SEQ ID NO: 56),
~~in conditions sufficient to allow the nucleic acid molecule to hybridise to a nucleic acid molecule having a complementary nucleic acid sequence and the other one of the pair is specific for a flagellin gene of *E. coli* and comprises SEQ ID NO: 57;~~

(b) contacting a gene of an *E. coli* in the sample with a nucleic acid molecule according to claim 32 under hybridizing conditions, in conditions sufficient to allow the nucleic acid molecule to hybridise to a nucleic acid molecule having a complementary nucleic acid sequence; and

(c) detecting any hybridized nucleic acid molecules wherein the presence of hybridized nucleic acid molecules signifies the presence of whether the nucleic acid molecules are hybridized to the genes, to detect the H and O serotype of the *E. coli* in the sample.

47. (Currently Amended) A method for detecting the presence of a particular H and O serotype of *E. coli* in a sample, the method comprising the following steps:

(a) contacting the sample, under hybridizing conditions, a gene of the *E. coli* with a at least one nucleic

acid molecule derived from and specific for a gene involved in the synthesis of a particular *E. coli* O antigen, the gene encoding a transferase enzyme or an enzyme involved in the transport or processing of a polysaccharide or oligosaccharide unit wherein the nucleic acid molecule is selected from the group consisting of:

~~wbdh~~ (nucleotide position 739 to 1932 of SEQ ID NO: 45,
~~wzx~~ (nucleotide position 8646 to 9911 of SEQ ID NO: 45,
~~wzy~~ (nucleotide position 9901 to 10953 of SEQ ID NO: 45,
~~wbdM~~ (nucleotide position 11821 to 12945 of SEQ ID NO: 45,
~~wbdN~~ (nucleotide position 79 to 861 of SEQ ID NO: 56),
~~wbdO~~ (nucleotide position 2011 to 2757 of SEQ ID NO: 56),
~~wbdP~~ (nucleotide position 5257 to 6471 of SEQ ID NO: 56),
~~wbdR~~ (nucleotide position 13156 to 13821 of SEQ ID NO: 56),
~~wzx~~ (nucleotide position 2744 to 4135 of SEQ ID NO: 56),
~~wzy~~ (nucleotide position 858 to 2042 of SEQ ID NO: 56);

(b) contacting a gene of an *E. coli* in the sample, under hybridizing conditions, with a nucleic acid molecule according to claim 32 and one or more nucleic acid molecules comprising a nucleotide sequence of any one of 1 to 12 or 14 to 44 or 46 to 55 or 57 to 68 or a part thereof, in conditions sufficient to allow at least one of the nucleic acid molecules to hybridise to a nucleic acid sequence; and

(c) contacting the sample, under hybridizing conditions with a nucleic acid molecule comprising SEQ ID NO:57; and

(ed) detecting whether the any hybridized nucleic acid molecules wherein the presence of hybridized

nucleic acid molecules signifies the presence of the particular H and O serotype nucleic acid molecules are hybridized to the genes, to detect the H and O serotype of the *E. coli* in the sample.

48. (Currently Amended) A method according to claim 46 or 47 wherein the nucleic acid molecule of step (a) is a forward primer or a reverse primer selected from the group consisting of

Forward primer (base position of SEQ ID NO:1)	Reverse Primer (base position of SEQ ID NO:1)
739-757	1941-1924
925-942	1731-1714
925-942	1347-1330
1165-1182	1731-1714
8646-8663	9908-9891
8906-8923	9468-9451
9150-9167	9754-9737
9976-9996	10827-10807
10113-10130	10484-10467
10931-10949	11824-11796
11821-11844	12945-12924
12042-12059	12447-12430
12258-12275	12698-12681

Forward primer sequence	Reverse Primer sequence
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(nucleotide positions of SEQ ID NO:2)	(nucleotide positions of SEQ ID NO:2)
79-96	861-844
184-201	531-514
310-327	768-751
858-875	2042-2025
1053-1070	1619-1602
1278-1295	1913-1896
2011-2028	2757-2740
2110-2127	2493-2476
2305-2322	2682-2665
2744-2761	4135-4118
2942-2959	3628-3611
5257-5274	6471-6454
5440-5457	5973-5956
5707-5724	6231-6214
13261-13278	13629-13612
13384-13401	13731-13714

49. (Previously Presented) A method according to claim 46 or 47 wherein the hybridised nucleic acid molecules are detected by Southern Blot analysis.

50-55. (Cancelled)

56. (Previously Presented) A method according to claim 40 or 41 wherein the sample is selected from the group consisting

of a sample derived from food, a sample derived from faeces and a sample derived from a patient or animal.

57. (Currently Amended) A kit for identifying the H serotype of *E. coli*, the kit comprising a nucleic acid molecule according to claim 32, a primer according to claim 37, or a composition according to claim 34, or 35 ~~or~~ 39.

58. (Currently Amended) A kit for identifying the H and O serotype of *E. coli*, the kit comprising:

(a) a nucleic acid molecule according to claim 32; and

(b) at least one nucleic acid molecule selected from the group consisting of:

~~wbdH (nucleotide position 739 to 1932 of SEQ ID NO: 45),~~
~~wzx (nucleotide position 8646 to 9911 of SEQ ID NO: 45),~~
~~wzy (nucleotide position 9901 to 10953 of SEQ ID NO: 45),~~
~~wbdM (nucleotide position 11821 to 12945 of SEQ ID NO: 45),~~
~~wbdN (nucleotide position 79 to 861 of SEQ ID NO: 56),~~
~~wbdO (nucleotide position 2011 to 2757 of SEQ ID NO: 56),~~
~~wbdP (nucleotide position 5257 to 6471 of SEQ ID NO: 56),~~
~~wbdR (nucleotide position 13156 to 13821 of SEQ ID NO: 56),~~
wzx (nucleotide position 2744 to 4135 of SEQ ID NO: 56) and
wzy (nucleotide position 858 to 2042 of SEQ ID NO: 56).

59. (Currently Amended) A kit for identifying the H and O serotype of *E. coli*, the kit comprising:

(a) a nucleic acid molecule according to claim 32 and one or more nucleic acid molecules comprising the nucleotide sequence of any one of SEQ ID NO: 1 to 12 or 14 to 44 or 46 to 55 or 57 to 68 or a part thereof; and

(b) at least one nucleic acid molecule selected from the group consisting of:

~~wbdH (nucleotide position 739 to 1932 of SEQ ID NO: 45),~~
~~wzx (nucleotide position 8646 to 9911 of SEQ ID NO: 45),~~
~~wzy (nucleotide position 9901 to 10953 of SEQ ID NO: 45),~~
~~wbdM (nucleotide position 11821 to 12945 of SEQ ID NO: 45),~~
wbdN (nucleotide position 79 to 861 of SEQ ID NO: 56),
wbdO (nucleotide position 2011 to 2757 of SEQ ID NO: 56),
wbdP (nucleotide position 5257 to 6471 of SEQ ID NO: 56),
wbdR (nucleotide position 13156 to 13821 of SEQ ID NO: 56),
wzx (nucleotide position 2744 to 4135 of SEQ ID NO: 56) and
wzy (nucleotide position 858 to 2042 of SEQ ID NO: 56).

60. (Currently Amended) A kit according to claim 58 or 59 wherein the ~~composition~~ nucleic acid molecule of step (b) comprises a nucleic acid molecule acting as a forward primer or a reverse primer selected from the group consisting of

Forward primer (base position of SEQ ID NO:1)	Reverse Primer (base position of SEQ ID NO:1)
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739-757	1941-1924
925-942	1731-1714
925-942	1347-1330
1165-1182	1731-1714
8646-8663	9908-9891
8906-8923	9468-9451
9150-9167	9754-9737
9976-9996	10827-10807
10113-10130	10484-10467
10931-10949	11824-11796
11821-11844	12945-12924
12042-12059	12447-12430
12258-12275	12698-12681

Forward primer sequence (nucleotide position of SEQ ID NO:2)	Reverse Primer sequence (nucleotide position of SEQ ID NO:2)
79-96	861-844
184-201	531-514
310-327	768-751
858-875	2042-2025
1053-1070	1619-1602
1278-1295	1913-1896
2011-2028	2757-2740
2110-2127	2493-2476
2305-2322	2682-2665
2744-2761	4135-4118

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2942-2959	3628-3611
5257-5274	6471-6454
5440-5457	5973-5956
5707-5724	6231-6214
13261-13278	13629-13612
13384-13401	13731-13714

primers shown in the Table above.

61. (Currently Amended) A kit according to claim 58 or 59 wherein the nucleic acid molecule ~~composition of step~~ (a) comprises a forward primer and a reverse primer selected from the group consisting of

Forward primer (base position of SEQ ID NO:1)	Reverse Primer (base position of SEQ ID NO:1)
739-757	1941-1924
925-942	1731-1714
925-942	1347-1330
1165-1182	1731-1714
8646-8663	9908-9891
8906-8923	9468-9451
9150-9167	9754-9737
9976-9996	10827-10807
10113-10130	10484-10467

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10931-10949	11824-11796
11821-11844	12945-12924
12042-12059	12447-12430
12258-12275	12698-12681

Forward primer sequence (nucleotide position of SEQ ID NO:2)	Reverse Primer sequence (nucleotide position of SEQ ID NO:2)
79-96	861-844
184-201	531-514
310-327	768-751
858-875	2042-2025
1053-1070	1619-1602
1278-1295	1913-1896
2011-2028	2757-2740
2110-2127	2493-2476
2305-2322	2682-2665
2744-2761	4135-4118
2942-2959	3628-3611
5257-5274	6471-6454
5440-5457	5973-5956
5707-5724	6231-6214
13261-13278	13629-13612
13384-13401	13731-13714

forward and reverse primers shown in the Table above.

62. (Cancelled)

63. (Currently Amended) A method according to claim 46 or 47 wherein the sample is selected from the group consisting of a sample derived from food, a sample derived from faeces and a sample derived from a patient or animal.

64-65. (Cancelled)

66. (Currently Amended) A kit for identifying the H and O serotype of E. coli E. coli, the kit comprising:

- (a) at least one primer according to claim 37 or a composition according to claim 39; and
- (b) at least one nucleic acid molecule selected from the group consisting of:

~~wbdH (nucleotide position 739 to 1932 of SEQ ID NO: 45),~~
~~wzx (nucleotide position 8646 to 9911 of SEQ ID NO: 45),~~
~~wzy (nucleotide position 9901 to 10953 of SEQ ID NO: 45),~~
~~wbdM (nucleotide position 11821 to 12945 of SEQ ID NO: 45),~~
~~wbdN (nucleotide position 79 to 861 of SEQ ID NO: 56),~~
~~wbdO (nucleotide position 2011 to 2757 of SEQ ID NO: 56),~~
~~wbdP (nucleotide position 5257 to 6471 of SEQ ID NO: 56),~~
~~wbdR (nucleotide position 13156 to 13821 of SEQ ID NO: 56),~~
~~wzx (nucleotide position 2744 to 4135 of SEQ ID NO: 56) and~~
~~wzy (nucleotide position 858 to 2042 of SEQ ID NO: 56).~~

36. 67. (Currently Amended) A kit for identifying the H serotype of E. coli, the kit comprising a nucleic acid

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molecule according to claim 32 and one or more nucleic acid molecules comprising the nucleotide sequence ~~of any one~~ of SEQ ID NO: ~~1 to 12, 14 to 44, 46 to 55 or 57 to 68 or a part thereof.~~

37.—68. (Currently Amended) A kit comprising a nucleic acid molecule according to claim 32 and one or more nucleic acid molecules comprising ~~the nucleotide sequence of any one of~~ SEQ ID NO: 56 or 57 ~~1 to 12 or 14 to 68 or a part thereof.~~

Please add new claim 69 as follows

69. (New) An isolated and purified nucleic acid molecule comprising the nucleic acid sequence from position 586 to 810 of SEQ ID NO:13.